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Using participatory design to develop structured training in child and adolescent psychiatry

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■ **Abstract** *Context* Learning during residency in child and adolescent psychiatry (CAP) is primarily work-based and has traditionally been opportunistic. There are increasing demands from both postgraduate trainees and medical organisations for structured programmes with defined learning outcomes. *Objectives* The aim of this study was to partner with postgraduate trainees and consultants in psychiatry to identify key learning issues that should be considered during CAP residency and to use these in designing a structured programme to meet the learning outcome requirements of a competency framework.

Methods Participatory design was used to structure a learning and assessment programme in CAP. First, during working seminars, consultants and postgraduate trainees were interviewed about the characteristics of the learning and working in CAP. These interviews were audio taped, transcribed and analyzed for recurrent themes to identify key issues. Descriptive results were fed back to the participants for validation. In a subsequent iterative process the researchers and practitioners partnered to construct a learning and assessment programme. *Results*

The tasks within CAP were poorly described by study participants. Several other types of professionals within the healthcare team perform many of the tasks a CAP postgraduate trainee has to learn. Participants had difficulties describing how learning takes place and what postgraduate trainees need to learn in CAP. The partnership between researchers and practitioners identified three key issues to consider in CAP residencies: (1) Preparation for tasks postgraduate trainees are expected to fulfil, (2) Ensuring acquisition of physician-specific knowledge and skills, and (3) Clarifying roles and professional identity within the team. A structured training programme incorporating the key learning issues identified was created. *Conclusion* Participatory design was very helpful to structure a contextually suitable training programme in CAP. The researchers speculate that this approach will result in easier implementation of the new training programme.

■ **Key words** child and adolescent psychiatry – design based research or participatory design – graduate medical education – curriculum design – in-training assessment

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Introduction

Postgraduate trainees in child and adolescent psychiatry (CAP) are expected to achieve learning outcomes in broad aspects of competence while engaging in their daily work. Postgraduate trainees require structured training programmes that inform them about their progress toward achieving these learning outcomes [13]. While samples of core competencies have been eloquently written [23], it can be difficult to implement these in the context of CAP training in Europe where postgraduate trainees may spend 6 months or more with a single consultant or in a department working with a specific diagnosis group(s) and learning is often opportunistic. Effective and efficient tools for postgraduate trainee assessment are needed if medical educators are to ensure achievement of the learning outcomes [19].

A person-task-context model has been used to describe work-based learning [9]. In this model one gathers qualitative, quantitative or combined data to determine the prior knowledge and experience of the learners, the tasks they perform and must learn, and the context in which they learn and practice. Triangulation of results guides the design of a contextually suitable programme to promote development of competence in the desired learning outcomes. This model has proved effective in designing a learning and assessment programme in internal medicine [22]. Effective use of this model requires a rich description of the interplay of the persons, tasks, and context in the postgraduate workplace.

Participatory design has been used effectively in development of curricula for workplace learning [26]. In this curriculum design model, users articulate their needs, which are used to design the curriculum. The users and designers work together in the trial, evaluation, and redesign of the curriculum as needed. The aim of this study was to explore whether the person-task-context model could be used within a participa-

tory design protocol to identify key issues to consider when developing a structured curriculum for learning and assessment in CAP.

Methods

■ Participants

Clinical departments of CAP in Region East of Denmark were invited to three full day working seminars to inform the design of structured training and in-training assessment in their specialty. The invitation indicated that the department should ideally send both a senior doctor and a postgraduate trainee. Representatives from 11 different departments were available to attend the seminars, including nine consultants, four specialty registrars, and four senior house officers.

■ Format of the initial working seminar

The purpose of the seminars and the person-task-context model were introduced on the first day. Small groups of physicians of similar seniority discussed each topic, and then reported to the plenary, which was followed by a general discussion. This design allowed the investigators to elicit the views of consultants, specialty registrars, and senior house officers in a safe peer environment. A medical educator (CR) with experience in designing postgraduate training facilitated the seminar. Two observers helped with the logistics.

Key questions during the seminar promoted participant verbalization of the characteristics of individuals' training and professional development, the type of tasks postgraduate trainees perform, and the context of the work environment, including the available learning supports (Table 1). Participants

Table 1 Examples of questions used in the focus groups for the person-task-context model

Person	What backgrounds do individuals starting psychiatry training have? How important are your own life experiences in your work as a psychiatrist? Is it important to have had experiences with children or adolescents? What do you like about psychiatry? Why did you choose it as a specialty?
Task	What are the typical tasks one performs in child and adolescent psychiatry? Describe what you do in a usual day. What did the senior house officers or registrars do last week? Are there tasks that are typically done by senior house officers or by specialist registrars or by consultants? If I was a new doctor starting in your department, what would happen, what types of things would I do? Describe what happens when you are on call.
Context	Describe your teams. How do they work? Who are the team members? How are other team members involved in education? If I were a parent of a child in difficulty, what would happen, who would I see, who would take care of my child? What would be the ideal learning situation in child and adolescent psychiatry? What is hard to learn? Is there anything for which there could be a different approach or structure to the learning? How do you learn x? Are there specific techniques you have to learn? What do you need to read?

The focus groups were semi-structured, with ongoing opportunities to ask participants to reflect on their responses and provide further detail

considered what postgraduate trainees find especially difficult to learn as well as differences in expectations for learners throughout the continuum of training. Participants were also asked to provide suggestions about how to improve learning.

■ Data analysis and synthesis

The plenary discussions were audio taped and transcribed verbatim. Two of the authors (CR and DD) read and analyzed the transcript from three approaches to analysis of meaning [14]. First they read the transcripts to discover recurrent themes. Thereafter a content analysis was performed taking into account the questions asked and the identified recurrent themes in a consensus process. Finally, through an iterative discussion, the authors looked for associations and relationships between the themes so as to identify the main issues that may affect postgraduate training in CAP [17].

■ Construction of the programme

The results of the synthesis of data from the first working seminar were fed back to the CAP consultants and postgraduate trainees in the next workshop for validation of the description of their practice. Further, a child and adolescent psychiatrist (MB) and two of the other researchers (CR and DD) synthesized the results and combined them with information from the medical education literature to develop suggestions for improvement related to each identified issue. These suggestions were used in the design of 'competence-cards' addressing the expected learning outcomes that postgraduate trainees should achieve in agreed upon subject areas, which included the important tasks and diagnoses within CAP. These competence-cards were presented to the CAP consultants and postgraduate trainees at the second and third workshops. There were opportunities for discussion, trials of the competence-cards, and revision as necessary. The competence-cards form the basis for a new structured training programme in CAP.

Results

The seminar participants enthusiastically described a workplace in which teamwork and clinical supervision were important elements of the learning context. However, participants had difficulty detailing specifically how these contribute to learning. In this paper, information about and examples of how the person, task, and context contribute to learning are first

presented. This is followed by a presentation of the key issues identified through the explanatory conceptual analysis. Finally, examples of tools to structure learning and assessment developed from this synthesis are presented.

■ Person

Postgraduate trainees in CAP come from varied backgrounds, some directly from internship, some with years of experience in other specialties. Despite prior experience as physicians doing patient consultations, they face a whole new language and context in CAP.

"...where we've been trained... the patients ask questions and the doctor has answers... In CAP our goal is most often to ask questions so that the patient can find the answers themselves... and it is really difficult to make this switch" [senior house officer].

Postgraduate trainees' knowledge bases can vary substantially. However, theoretical knowledge is perceived to be downplayed.

"I actually asked about a textbook and I was told that I shouldn't really concentrate on that." [specialty registrar].

This lack of emphasis on codified knowledge and evidence is difficult for many postgraduate trainees who clearly desire a more systematic and empiric approach to CAP. Postgraduate trainees feel that work-up and diagnosis in CAP is often based on the doctor's subjective impressions rather than objective evidence. They complain of difficulty "seeing" the consultant's clinical reasoning process.

■ Tasks

Several other healthcare professionals within the team perform many of the tasks a new psychiatry postgraduate trainee has to learn, including the various interviews, consultations, and meetings that guide the care of patients. Workshop participants needed focused prompting to verbalize physician-specific tasks in the CAP workplace. Examples included the physical examination, the functional neurological examination, consultation-liaison functions, prescribing drugs, and making formal judgments. Participants raised concerns about preparation for these tasks. They gave examples of tasks in which they felt other mental health team members might be more competent, even though these tasks are not usually ones assigned to non-physicians. For example,

"It's a little bit confusing because one who is a relatively young doctor makes this serious assessment decision and it's not the [experienced] psychologist that takes it." [specialty registrar speaking about suicide risk assessment].

History taking, although not a physician-specific task, was mentioned as a task for which physicians feel ill prepared as an early CAP postgraduate trainee, despite interview skills training in medical school. Making diagnoses and planning management did not figure highly in the discussion. Physician-specific tasks were not different between levels of experience and there was not a clear description of progression in level of expertise.

"... as senior house officers, we feel in any case, that we do everything. That there isn't any hierarchy... except for referrals, there is no assessment of whether this is a specialist task or something the newest postgraduate trainee can do." [senior house officer].

Finally, the person responsible for treatment of a patient is not always a psychiatrist or a psychologist. The choice of treating team member is sometimes based on patient needs and sometimes serendipitous. A postgraduate trainee may be the only physician on a care team and be the "treating person" before orientation is complete.

■ Context

The theme of working within teams in CAP was prominent. Postgraduate trainees are expected to learn from other members of the team but the content of this learning was not specified. Focus group participants agreed that up to half of new postgraduate trainees have difficulty learning from other team members. The postgraduate trainees rely on non-physician members of the team for guidance but this does not prepare them for the medical expert role, including the serious events that they first encounter when alone on call. While participants note that presumed knowledge of psychopathology distinguishes them from other healthcare professionals, how and when a postgraduate trainee learns psychopathology was unclear.

"And it is a big schism because, although I agree that one can learn a lot from other professional groups, one needs 'hooks to hang one's hat on' and they don't have those hooks [knowledge of psychopathology]..." [specialty registrar]

Furthermore, postgraduate trainees need to follow-up with a physician what they have learnt from the other team members.

"...all of us would agree that we can learn a lot from psychologists and nurses but if it isn't soon followed up closely by a doctor then we can get really confused and I think we have a problem" [senior house officer].

All workshop participants agreed that the weekly one-hour supervision, during which a consultant and a postgraduate trainee discuss generally patient-related, postgraduate trainee-generated issues, is central to learning.

"...there is a lot that one needs to achieve in that single hour per week, if one needs to go over all considerations, all problems, how to handle particular situations..." [specialty registrar]

The consultants reported a qualitative difference in the supervision hour as postgraduate trainees progress through training, but were unable to describe the actual differences. The quantity of supervision does not change with progression through training or with patient complexity.

"... one ends up with a very difficult patient, without it necessarily being coupled with more supervision." [specialty registrar]

How busy the department is can affect informal supervisory opportunities and there are indications of missed learning opportunities.

"... there are loads of opportunities for discussion when things are quiet, ... but with an acute case one can actually go quite some time before meeting one's preceptor" [specialty registrar].

Postgraduate trainees voiced a need for both more direct observations of their interactions with patients as well as the opportunity to observe more senior colleagues in both routine and non-routine tasks.

■ Conceptual analysis

Further analysis of the results identified three key issues that should be considered in designing structured training in CAP: (1) appropriate preparation for the tasks that are expected at each stage of training, (2) acquisition of a fund of medical knowledge and clinical reasoning skills, and (3) clarification of roles and professional identity within the health care team.

■ Synthesis

In an iterative process over the course of the three workshops, the researchers and CAP consultants and

Table 2 The key features of the competence-cards for senior house officers

Type of assessment	Task or disease targeted	Key features
Observation (in vivo or on video)	Patient consultation (unspecified illness category)	Specific observational checklist
Case-based discussion with supervisor	Team conference (unspecified illness category)	Knowledge of chosen illness category and pertinent findings in specific case
	Autism spectrum disorders	Knowledge of pertinent medical, legal, and/or ethical aspects of care
	Conduct disorders	Assessment of letter written to relevant collaborators for a case of autism spectrum disorder
Written reflective case analysis	Obsessive-compulsive disorders	Case write-up
	Personality disorders	Critical analysis of the case and the literature pertaining to decisions made for this particular patient
	Attention deficit disorders	Use of analysis to make recommendations for future practice
	Affective disorders	

The observation of a patient consultation is undertaken 6 times during the year (approximately every 2 months)

postgraduate trainees developed a structured training programme. The programme for the senior house officer year centred on eight task- or diagnosis-specific competence-cards (Table 2), while that for specialist registrars consisted of 26 competence-cards spread over the 4 years of training (Table 3). The cards for senior house officers emphasise basic skills and knowledge, while those for specialist registrars

are augmented by requirements to analyse and evaluate practice. The competence-cards can be used for teaching, learning and in-training assessment. The cards include key items that link practical skills and theory, emphasizing the medical expert role while also addressing broad aspects of competence, including interactions within the inter-professional team. For example, Fig. 1 “Autism spectrum disorders” shows

Table 3 The key features of the competence-cards for specialist registrars

Type of assessment	Task or disease targeted	Key features
Observation (in vivo or on video)	Play (unspecified patient category)	Specific observational checklist
Case-based discussion with supervisor	Conference with family and external partners (autism spectrum disorders)	Use of information to formulate psychiatric assessment
	Interview of adolescent	Reflection on own performance
	Family meeting (newly diagnosed schizophrenia)	
Written reflective case analysis	Mental retardation	Knowledge of the illness category, with reference to the literature
	Psychopharmacology of anxiety disorders	Case write-up
	Disturbed mother-infant relationship	Critical analysis of the case and the literature
Chart audits	Obsessive-compulsive disorders	Use of analysis to make recommendations for future practice
	Eating disorders	
	Affective disorders	
Teaching	Psychosis	
	Conflict management	
	Acute adolescent psychiatry	Acute information gathering and care
Collaboration	Acute child psychiatry	Knowledge of pertinent medical, legal, and/or ethical aspects of care
	Tics	Identification of key potential teaching points
	Personality disorders in adolescence	
Written recommendations to external partners	Eating disorders	
	Acute adolescent psychiatry	
	Unspecified topic	Appropriate preparation, knowledge, and delivery for specified audience
Collaboration	Autism-spectrum disorders	
	Psychopharmacology	
	Personality disorders (adolescent)	
Written recommendations to external partners	Personality disorders (child)	
	In-patient	360° evaluation by co-workers
	Ambulatory	
Written recommendations to external partners	Conduct disorders	Appropriate information, recommendations, and delivery for specified recipients

Approximately six cards are completed during each of the 4 years

Fig. 1 "Autism spectrum disorders". An example of a competence-card to assess a senior house officer's competence in the diagnosis of autism spectrum disorders as well as their written communication skills

This assessment takes place as a discussion with the senior house officer in an appraisal meeting and includes an assessment of a report written to collaborators. The assessor is the senior house officer's clinical supervisor or another senior doctor.

For each item, 1 = not at all, unsatisfactory, 3 = acceptable, 5 = to a great extent, outstanding. The overall assessment is not the average of all the marks, but a global rating from 1–5.

Diagnostic Criteria	1–5
<ul style="list-style-type: none"> State a minimum of 3 essential diagnostic criteria for autism spectrum disorders. Describe and justify which investigations the physician should choose to make the diagnosis. 	<input type="checkbox"/>
<ul style="list-style-type: none"> Describe the age-dependent characteristics that have an influence on the diagnostic criteria. 	<input type="checkbox"/>
<ul style="list-style-type: none"> Give three relevant differential diagnostic considerations within this diagnostic group and state which investigations must be undertaken to differentiate them. 	<input type="checkbox"/>
<ul style="list-style-type: none"> Give three relevant differential diagnostic considerations outside of this diagnostic group and state which investigations must be undertaken to rule them out. 	<input type="checkbox"/>
Age Variation	
<ul style="list-style-type: none"> Describe the age-related variations within this diagnostic group by giving theoretical descriptions of the expected findings in a 5 year old patient, a 10 year old patient, and a 15 year old patient. 	<input type="checkbox"/>
Diagnostic Work-up	
<ul style="list-style-type: none"> Describe the classic diagnostic work-up for two of the sub-diagnoses in this diagnostic group, with reference to the newer relevant literature as well as to which other health professionals would be important to involve. 	<input type="checkbox"/>
Written Communication to Relevant Collaborators	
<ul style="list-style-type: none"> Write a short and relevant report of the background information, formulated in easy to read professional language. 	<input type="checkbox"/>
<ul style="list-style-type: none"> Give a report of the essential findings in the diagnostic work-up, formulated in easy to read professional language. 	<input type="checkbox"/>
<ul style="list-style-type: none"> Recommend support and treatment measures. 	<input type="checkbox"/>
<ul style="list-style-type: none"> Give prognosis based on the working diagnosis. 	<input type="checkbox"/>
Overall assessment of competence on this task (1–5)	<input type="checkbox"/>

the card designed to assess knowledge, to assess ability to communicate findings in writing to other healthcare professionals, to encourage evidence-based inquiry, and to promote clinical reasoning skills of senior house officers. Figure 2 shows an example of a competence-card for a specialist registrar, in which the ability to critically review and reflect upon pertinent clinical options for patient care is assessed.

Discussion

In this study, participatory design principles were used to design a structured, outcome-based learning and assessment programme in child and adolescent psychiatry (CAP). Initially, key issues important in the development of workplace competence for CAP were identified. The first of these is appropriate preparation for the tasks that the postgraduate trainee is expected to perform within the health care team. While the participants specifically stated that they worked within a community of practice [15], post-

graduate trainees move very quickly from the role of legitimate peripheral participation to membership with full authority simply because they have the title of doctor, and not necessarily because they have acquired the necessary competence.

Secondly, postgraduate trainees spend most of their time with non-physician healthcare team members. Postgraduate trainees request more emphasis on medical knowledge, physician-specific learning objectives and opportunities to interact with senior physicians in order to solidify the medical expert aspects of their competence. Thus the second key issue of importance is to ensure that postgraduate trainees acquire sufficient medical knowledge and clinical reasoning skills. Physician-specific learning objectives and supervision by senior physicians are necessary [4, 7].

Finally, several other types of professionals within the mental health team perform many of the tasks a postgraduate trainee has to learn and there are times when the postgraduate trainee may be the only physician on a particular treatment team. This can lead to

Fig. 2 “Psychopharmacology of anxiety disorders”. Example of a competence-card to assess the specialist registrar’s ability to critically analyse and make recommendations about psychopharmacologic treatment of anxiety disorders using relevant medical literature

This is an assessment of a reflective report written by the specialist registrar. The assessor can be the registrar’s clinical supervisor or another senior doctor.

For each item, 1 = not at all, unsatisfactory, 3 = acceptable, 5 = to a great extent, outstanding.
The overall assessment is not the average of all the marks, but a global rating from 1–5.

The tasks to complete this competence-card include the following:

Case description.

- A brief, clear, and precise description of a patient case in this diagnostic category.

Formulation of the specific clinical issue.

- A psychopharmacological issue relevant to the case that the registrar wants to research further is chosen and described.

Literature search.

- The issue is formulated into a research question and a literature search in relevant databases is undertaken.

Discussion.

- The literature findings in relation to the patient care issue are analysed and discussed.

Report

- A written reflective report demonstrates the findings and practice recommendations.

Assessment :

1–5

The specialist registrar has:

- Clearly and precisely described the chosen patient case. ☐
- Clearly described the issue for further research, including the rationale for choosing it. ☐
- Formulated a clear research question. ☐
- Searched the literature and chosen relevant references. ☐
- Discussed the results of the literature search in relation to the specific chosen patient care issues. ☐
- Written a summary of the findings and incorporated these into suggestions for their own practice or that of their department. ☐

Overall assessment of competence on this task (1–5).

☐

role blurring and make it difficult for postgraduate trainees to develop professional identities. Learning how to be a psychiatrist requires time spent with psychiatrists, yet to function on a mental health team also requires interaction with the rest of the inter-professional team. Hence the third key issue to consider in designing structured learning in CAP is clarification of roles and development of professional identity within the mental health team [1, 5, 6, 10].

Theories of work-based learning [9, 24] would infer that attainment of learning outcomes in the postgraduate workplace is influenced by the wide variations in prior experiences and competence of the postgraduate trainees, the workplace context, and the influence of the many other individuals within the healthcare system, including patients, physician colleagues, other healthcare professionals, and administrators. These theories have not previously been applied systematically to the design of structured learning and assessment programmes in postgraduate medical education [3, 25]. Further, while psychiatrists work within communities of practice, these are more often multi-professional, rather than the uni-professional communities of practice described in the lit-

erature [15]. Much less is known about situated learning in multi-professional communities of practice than communities of practice within unique professions. While non-physician health care professionals have been integrated into the postgraduate medical education milieu [12, 18], evaluations of their educational contributions are limited [2, 11]. Even less has been published about the contributions of these individuals to postgraduate medical education in CAP. Newly developing theories of inter-professional practice [8] have not addressed how to design postgraduate training programmes and clearly much more research needs to be done in how medical competence can best develop within an inter-professional learning context. Given the urgent need for a more structured learning approach expressed by participants, the current scope of this work does not include inter-professional education in CAP per se, although the competence-cards address team skills. A next step would be to include the different professionals from the CAP workplace in an action research protocol [16], perhaps in laboratory sessions similar to those described by Engeström [8]. The challenge of working together to plan and monitor care by post-

graduate trainees and learning by postgraduate trainees in an inter-professional workplace would seem to fit Engeström's model of studying interconnected activity systems through the building of detailed cases followed by facilitated discussions and problem-solving [8].

Results from this study may be limited by small sample size and limited encounter time with participants. However, CAP is a specialty with a limited number of members; participants came from a range of institutions in both university and community settings. Senior and junior doctors were well represented and interacted within the safe environment of small groups of peers. The lack of ability to describe their practice in greater detail is not likely to have improved with more participants, nor with further questioning. The facilitator was adept at trying to reword questions to further enrich the responses but saturation seemed to have been met and participants agreed to the overall description of their practice. The conceptual generalization developed from the analysis allowed the researchers to move from the descriptions to a more explanatory level and, in partnership with the practitioners, to develop assessment tools that would address the identified key issues.

This study used participatory design methodology to design a structured curriculum for CAP residency training. Past experience from our group has shown that such curricula help structure learning as well as ensure supervisor and postgraduate trainee meetings

with guided discussions [20, 21]. Further, the learning and assessment tools can be ordered such that postgraduate trainees must complete certain ones in order to increase the amount of graded responsibility they are given, thus improving preparation for the tasks they are expected to achieve. This study identified several issues that may impact curriculum and in-training assessment design in the inter-professional, work-based learning context of CAP. Both physician-specific and inter-professional aspects of training must be considered when developing a learning and assessment programme.

In conclusion, the person-task-context model applied in a participatory design protocol proved to be very helpful in identifying some key issues to be considered in structuring training in CAP. The study was not designed to determine whether participatory design methodology gave rise to a different outcome than would have occurred from different approaches to curricular design. However, the curriculum is currently being used and its effectiveness will be evaluated. A benefit of the participatory design methodology was that it allowed verbalization of the practice context, an important aspect of adult learning. Practitioners had the opportunity to articulate their needs, including giving input into the learning objectives and how they should be assessed. The researchers speculate that this participatory design will result in better 'buy-in' and enable improved implementation of the programme.

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